

1.0 INTRODUCTION

The groundfish fisheries in the Exclusive Economic Zone (EEZ) (3 to 200 miles offshore) off Alaska are managed under the Fishery Management Plan for Groundfish of the Gulf of Alaska and the Fishery Management Plan for the Groundfish Fisheries of the Bering Sea and Aleutian Islands Area. Both fishery management plans (FMPs) were prepared by the North Pacific Fishery Management Council (Council) under the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act). The Gulf of Alaska Groundfish (GOA) FMP was approved by the Secretary of Commerce and became effective in 1978, and the Bering Sea and Aleutian Islands Area (BSAI) FMP become effective in 1982.

Salmon fishing in the EEZ off the coast of Alaska is managed under the Fishery Management Plan for the Salmon Fisheries in the EEZ off the Coast of Alaska. This plan was prepared by the Council in 1978. The Secretary of Commerce (Secretary) approved the plan on 3 May 1979, and it was first implemented on 3 May 1979.

The scallop fishery in the EEZ and in Alaskan state waters has been managed by the State of Alaska (State) since a fishery began in 1968. A Federal Fishery Management Plan was adopted by the Council in April 1995 and approved by the National Marine Fisheries Service (NMFS) on July 26, 1995.

The Fishery Management Plan for the Commercial King and Tanner Crab Fisheries in the Bering Sea/Aleutian Islands was approved by the Secretary of Commerce on June 2, 1989.

Actions taken to amend the FMPs must meet the requirements of Federal laws and regulations. In addition to the Magnuson-Stevens Act, the most important of these are the National Environmental Policy Act (NEPA), the Endangered Species Act (ESA), and the Marine Mammal Protection Act (MMPA).

NEPA and E.O. 12866 require a description of the purpose and need for the proposed action as well as a description of alternative actions which may address the problem. This information is included in Section 1 of this document. Section 2 contains information on the biological, environmental and socioeconomic impacts of the alternatives as required by NEPA. Impacts on endangered species and marine mammals are also addressed in this section.

This Environmental Assessment (EA) addresses alternatives for amending the FMPs to meet Magnuson-Stevens Act requirements for essential fish habitat (EFH). In April 1998, the Council reviewed the EFH analysis, which included the proposed closure of the Cape Edgecumbe pinnacles to fishing and anchoring. Based on public testimony and advice from its advisory bodies (the Advisory Panel and Scientific and Statistical Committee), the Council requested that the pinnacle closure be made a separate decision action item within the EFH document. A revised EFH EA document was released for public review on May 12.

In June 1998, the Council reviewed the material and decided to separate the pinnacle closure from EFH provisions, and adopt it as a separate amendment (tentatively identified as Amendment 59 to the GOA groundfish FMP). Based on public testimony and advice from its advisory bodies and NMFS, the Council adopted Alternative 2, for a plan amendment to define EFH as the area identified as general distribution for all information levels and under all stock conditions.

1.1 Purpose of and Need for the Action

The Magnuson-Stevens Act amendments emphasized the importance of habitat protection to healthy fisheries and to strengthen the ability of NMFS and the Councils to protect and conserve habitat of finfish, mollusks, and crustaceans. This habitat is termed essential fish habitat (EFH), and is defined to include “those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity”. The Councils are required to amend their fishery management plans by October 1998 to:

- identify and describe EFH for species managed under a fishery management plan;
- describe adverse impacts to that habitat from fishing activities;
- describe adverse impacts to that habitat from non-fishing activities; and
- recommend conservation and enhancement measures necessary to help minimize impacts, protect, and restore that habitat; and
- include conservation and enhancement measures necessary to minimize, to the extent practicable, adverse impacts from fishing on EFH.

Once the FMPs are amended with this EFH information, NMFS and the Councils can be more proactive in protecting habitat areas by alerting other federal and state agencies about areas of concern. Federal agencies engaging in activities that may adversely affect EFH must consult with NMFS regarding those activities. NMFS and the Council may make suggestions on how to mitigate any potential habitat damage. The Council will be required to comment on any project that may affect salmon habitat or habitat of any other anadromous fish (smelt, steelhead, etc.). However, the interim final rule encourages coordination between NMFS and the Councils, and may allow for the Council to delegate the consultation process to NMFS.

The themes of sustainability and risk-averse management are prevalent throughout the Magnuson-Stevens Act, both in the management of fishing practices (e.g., reduction of bycatch and overfishing and consideration of ecological factors in determining optimum yield [OY]) and in the protection of habitats (i.e., prevention of loss of habitats, including EFH). Management of fishing practices and habitat protection are both necessary to ensure long-term productivity of our Nation’s fisheries. Mitigation of EFH losses and degradation will supplement the traditional management of marine fisheries. Councils and managers will be able to address a broader range of impacts that may be contributing to the reduction of fisheries resources. Habitats that have been severely altered may be unable to support populations adequately to maintain sustainable fisheries. Councils should recognize that fishery resources are dependent on healthy ecosystems; and that actions which alter the ecological structure and/or functions within the system can disturb the health or integrity of an ecosystem. Excess disturbance, including over-harvesting of key components (e.g., managed species) can alter ecosystems and reduce their productive capacity. Even though traditional fishery management and FMPs have been mostly based on yields of single-species or multi-species stocks, the Magnuson-Stevens Act encourages a broader, ecosystem approach through its EFH requirements. Councils should strive to understand the ecological roles (e.g., prey, competitors, trophic links within food webs, nutrient transfer between ecosystems, etc.) played by managed species within their ecosystems. They should protect, conserve, and enhance adequate quantities of EFH to support a fish population that continues to play its role in maintaining a healthy ecosystem as well as supporting a sustainable fishery.

According to the interim final rule, Councils must identify in FMPs the habitats used by all life history stages of each managed species in their fishery management units (FMUs). Habitats that are necessary to the species for spawning, breeding, feeding, or growth to maturity will be described and identified as EFH. These habitats must be described in narratives (text and tables) and identified geographically (in text and maps) in the FMP. The purpose of mapping is to make it easier to share information with the

public, affected parties, and Federal and state agencies, and to facilitate conservation and consultation. EFH that is judged to be particularly important to the long-term productivity of populations of one or more managed species, or to be particularly vulnerable to degradation, should be identified as "habitat areas of particular concern" (HAPC) to help provide additional focus for conservation efforts. After describing and identifying EFH, Councils must assess the potential adverse effects of all fishing-equipment types on EFH and must include management measures that minimize adverse effects, to the extent practicable, in FMPs. Councils are also directed to examine non-fishing sources of adverse impacts that may affect the quantity or quality of EFH and to consider actions to reduce or eliminate the effects. Councils are directed to identify means to further the conservation and enhancement of EFH.

Regulations implementing EFH statutory provisions establish procedures for implementing the coordination, consultation, and recommendation requirements of the Magnuson-Stevens Act. NMFS will coordinate with other Federal and state action agencies by providing them with descriptions and maps of EFH, as well as information on ways to conserve and enhance EFH. The regulations allow Federal agencies to use existing consultation/environmental review procedures or the procedures outlined in the regulation to fulfill their requirement to consult with NMFS on actions that may adversely affect EFH. Consultations may be conducted at a programmatic and/or project-specific level. In cases where effects from an action will be minimal, both individually and cumulatively, a General Concurrence (GC) procedure has been developed to simplify the Federal consultation requirements. Consultation on Federal actions may be conducted under Abbreviated or Expanded Consultation, depending on the severity of the threat to EFH. NMFS anticipates that a majority of Federal actions with the potential for adverse effects on EFH may be addressed through the abbreviated consultation process, the General Concurrence process, or existing review process and Programmatic Consultations. Coordination between NMFS and the Councils is encouraged in the identification of threats to EFH and the development of appropriate EFH conservation recommendations to Federal or state agencies. When NMFS or a Council provides EFH conservation recommendations to a Federal agency, that agency must respond in writing within 30 days. If the action agency's decisions differ from NMFS' conservation recommendations, further review of the decision may be continued by the two agencies, as detailed in the regulations.

1.2 Alternatives Considered

The alternatives proposed to be analyzed in the EA for these amendments are the following:

- 1.2.1 Alternative 1:** Status Quo. The FMPs would not be amended to meet Magnuson Act requirements (Section 303) for required provisions of FMPs. This is not a viable alternative because the Act mandates that any FMP must include a provision to describe and identify essential fish habitat for the fishery based on the guidelines established by the Secretary under section 305(b)(1)(A), minimize to the extent practicable adverse effects on such habitat caused by fishing, and identify other actions to encourage the conservation and enhancement of such habitat.
- 1.2.2 Alternative 2 : (Preferred)** EFH is defined as all habitat within a general distribution for a species life stage, for all information levels and under all stock conditions. A general distribution area is a subset of a species range. For any species listed under the Endangered Species Act, EFH includes all areas identified as "critical habitat."
- 1.2.3 Alternative 3:** For stocks deemed to be in healthy condition, EFH is defined as a subset of all habitat within a general distribution [e.g., areas of known concentration] in the

case of level 2 information or greater for a species life stage. For level 0 and 1 information, EFH is defined as all habitat within a general distribution for a species life stage. For stocks deemed to be in an "overfished" condition, EFH would be defined as the area of general distribution, regardless of information level. For any species listed under the Endangered Species Act, EFH includes all areas identified as "critical habitat."

1.3 Description and Identification of EFH

1.3.1 Guidance from the Interim Final Rule

Below are excerpts from the interim final rule (62 FR 66531 December 19, 1997) for guidance to the Council on the description and identification of EFH. NMFS recommendations on this subject are included in Chapter 7.0 of this document. These recommendations were based on the EFH Reports, which are incorporated by reference into this analysis. Copies of the following EFH reports are available from the Council office:

1. Essential Fish Habitat Report for the Groundfish Resources of the Bering Sea and Aleutian Islands, April 1, 1998.
2. Essential Fish Habitat Report for the Groundfish Resources of the Gulf of Alaska Region, April 1, 1998.
3. Essential Fish Habitat Report for the Bering Sea and Aleutian Islands King and Tanner Crabs, March 31, 1998.
4. Essential Fish Habitat Report for the Salmon Fisheries in the EEZ off the Coast of Alaska, March 31, 1998.
5. Essential Fish Habitat Report for the Scallop Fisheries off the coast of Alaska, March 31, 1998.

Essential fish habitat means those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity. For the purpose of interpreting the statutory definition of essential fish habitat: "Waters" include aquatic areas and their associated physical, chemical, and biological properties that are used by fish and may include aquatic areas historically used by fish where appropriate; "substrate" includes sediment, hard bottom, structures underlying the waters, and associated biological communities; "necessary" means the habitat required to support a sustainable fishery and the managed species' contribution to a healthy ecosystem; and "spawning, breeding, feeding, or growth to maturity" covers a species' full life cycle.

An EFH provision in an FMP must include all fish species in the fishery management unit (FMU). A Council may describe, identify, and protect the habitat of species not in an FMU; however, such habitat may not be considered EFH for the purposes of sections 303(a)(7) and 305(b) of the Magnuson-Stevens

Act. EFH may be described and identified in waters of the United States and the EEZ. Councils may describe, identify, and protect habitats of managed species beyond the EEZ; however, such habitat may not be considered EFH. Activities that may adversely impact such habitat can be addressed through any process conducted in accordance with international agreements between the United States and the foreign nation(s) undertaking or authorizing the action.

All FMPs must describe and identify EFH in text and with tables that provide information on the biological requirements for each life history stage of the species. These tables should summarize all available information on environmental and habitat variables that control or limit distribution, abundance, reproduction, growth, survival, and productivity of the managed species. Information in the tables should be supported with citations.

An initial inventory of available environmental and fisheries data sources relevant to the managed species should be useful in describing and identifying EFH. This inventory should also help to identify major species-specific habitat data gaps. Deficits in data availability (i.e., accessibility and application of the data) and in data quality (including considerations of scale and resolution; relevance; and potential biases in collection and interpretation) should be identified.

To identify EFH, basic information is needed on current and historic stock size, the geographic range of the managed species, the habitat requirements by life history stage, and the distribution and characteristics of those habitats. Information is also required on the temporal and spatial distribution of each major life history stage (defined by developmental and functional shifts). Since EFH should be identified for each major life history stage, data should be collected on, but not limited to, the distribution, density, growth, mortality, and production of each stage within all habitats occupied, or formerly occupied, by the species. These data should be obtained from the best available information, including peer-reviewed literature, data reports and "gray" literature, data files of government resource agencies, and any other sources of quality information.

EFH Information Levels

The interim final rule guidelines specify that the following approach should be used to gather and organize the data necessary for identifying EFH. Information from all levels should be used to identify EFH. The goal of this procedure is to include as many levels of analysis as possible within the constraints of the available data. Councils should strive to obtain data sufficient to describe habitat at the highest level of detail (i.e., Level 4).

(1) Level 1: Presence/absence distribution data are available for some or all portions of the geographic range of the species. At this level, only presence/absence data are available to describe the distribution of a species (or life history stage) in relation to potential habitats. Care should be taken to ensure that all potential habitats have been sampled adequately. In the event

Definitions and word usage from the interim final rule.

Adverse effect means any impact which reduces quality and/or quantity of EFH. Adverse effects may include direct (e.g., contamination or physical disruption), indirect (e.g., loss of prey, or reduction in species' fecundity), site-specific or habitat-wide impacts, including individual, cumulative, or synergistic consequences of actions.

Ecosystem means communities of organisms interacting with one another and with the chemical and physical factors making up their environment.

Healthy ecosystem means an ecosystem where ecological productive capacity is maintained, diversity of the flora and fauna is preserved, and the ecosystem retains the ability to regulate itself. Such an ecosystem should be similar to comparable, undisturbed, ecosystems with regard to standing crop, productivity, nutrient dynamics, trophic structure, species richness, stability, resilience, contamination levels, and the frequency of diseased organisms.

that distribution data are available for only portions of the geographic area occupied by a particular life history stage of a species, EFH can be inferred on the basis of distributions among habitats where the species has been found and on information about its habitat requirements and behavior.

(2) Level 2: Habitat-related densities of the species are available. At this level, quantitative data (i.e., density or relative abundance) are available for the habitats occupied by a species or life history stage. Because the efficiency of sampling methods is often affected by habitat characteristics, strict quality assurance criteria should be used to ensure that density estimates are comparable among methods and habitats. Density data should reflect habitat utilization, and the degree that a habitat is utilized is assumed to be indicative of habitat value. When assessing habitat value on the basis of fish densities in this manner, temporal changes in habitat availability and utilization should be considered.

(3) Level 3: Growth, reproduction, or survival rates within habitats are available. At this level, data are available on habitat-related growth, reproduction, and/or survival by life history stage. The habitats contributing the most to productivity should be those that support the highest growth, reproduction, and survival of the species (or life history stage).

(4) Level 4: Production rates by habitat are available. At this level, data are available that directly relate the production rates of a species or life history stage to habitat type, quantity, quality, and location. Essential habitats are those necessary to maintain fish production, consistent with a sustainable fishery and the managed species' contribution to a healthy ecosystem.

The information obtained through the analysis of this section will allow Councils to assess the relative value of habitats. Councils should interpret this information in a risk-averse fashion, to ensure adequate areas are protected as EFH of managed species. Level 1 information, if available, should be used to identify the geographic range of the species. Level 2 through 4 information, if available, should be used to identify the habitats valued most highly within the geographic range of the species. If only Level 1 information is available, presence/absence data should be evaluated (e.g., using a frequency of occurrence or other appropriate analysis) to identify those habitat areas most commonly used by the species. Areas so identified should be considered essential for the species. However, habitats of intermediate and low value may also be essential, depending on the health of the fish population and the ecosystem. Councils must demonstrate that the best scientific information available was used in the identification of EFH, consistent with national standard 2, but other data may also be used for the identification. If a species is overfished, and habitat loss or degradation may be contributing to the species being identified as overfished, all habitats currently used by the species should be considered essential in addition to certain historic habitats that are necessary to support rebuilding the fishery and for which restoration is technologically and economically feasible. Once the fishery is no longer considered overfished, the EFH identification should be reviewed, and the FMP amended, if appropriate. EFH will always be greater than or equal to aquatic areas that have been identified as "critical habitat" for any managed species listed as threatened or endangered under the Endangered Species Act. Where a stock of a species is considered to be healthy, then EFH for the species should be a subset of all existing habitat for the species.

1.3.2 Specification of EFH Information Levels for Alaska FMP Species

NMFS EFH guidelines provide a typology of information (Level 1 to 4) for classifying the level of information available on the distribution of a life stage. The Alaska technical teams followed these

guidelines but deemed it necessary to add another level, "Level 0," as a subset of Level 1, to define a level of knowledge less than Level 1, which requires presence/absence data sufficient for applying analyses of frequency of occurrence. Level 0 information is defined by the Groundfish Technical Team as follows: "No systematic sampling has been conducted for this species and life stage; may have been caught opportunistically in small numbers during other surveys." The BSAI Crab Technical Team used nearly the same definition for Level 0, but specified "research surveys."

Species' life stages with Level 0 information were further subclassified by the technical teams, as presented in the following table:

Classification of EFH level 0 used in the Alaska region EFH determinations based on available information. The classification system used in the Alaska region for levels 1-4 follows NMFS nationwide guidelines.	
Level 0	No systematic sampling has been conducted for this species and life stage; may have been caught opportunistically in small numbers during other research.
Level 0a	Some information on a species' life stage upon which to infer general distribution.
Level 0b	No information on the life stage, but some information on a similar species or adjacent life stage from which to infer general distribution.
Level 0c	No information on the actual species' life stage and no information on a similar species or adjacent life stages, or where complexity of a species stock structure prohibited inference of general distribution.

In some cases the technical teams were able to infer EFH for a species' life stage by using Level 0a and 0b information. However, they were not able to infer EFH in Level 0c situations. These cases, in which there was no information on the species' life stage in question, nor on similar species or adjacent life stages, were considered to be research priorities if the life stage was likely to be found in habitat at risk from human activities.

The primary distinction between level 1 and 2 data is how well the available surveys sample a certain species' life history stage. In this report, level 1 will refer to a situation where systematic sampling is adequate to reasonably establish presence or absence and encompasses a significant portion of potential habitat. Where sampling is inadequate to establish absence, and presence is established opportunistically or by

studies in only a limited portion of the probable range, a level 0 is designated. For groundfish, crab, and scallop FMP species, the primary source of information that results in an information level of 1 or 2 is the Alaska Fisheries Science Center surveys for stock assessment of adults. As a baseline, team members found that the bottom trawl survey did the best job of sampling adult shallow water flatfish in the Bering Sea. In this case, the sampling gear was relatively efficient at capturing this species, and sampling covered the entire adult distribution. Hence, for adult rock sole, areas of high density could be identified at level 2 information. On the other hand, the bottom trawl and longline surveys were unable to provide level 2 information for adults of a species that ranged deeper than the survey area (e.g., thornyheads), or occurred in areas not thoroughly surveyed (e.g., Atka mackerel). In these cases, fishery observer data sometimes provided adequate information to determine areas of known concentration.

Tables 1.1-1.5 list EFH information levels for groundfish, crab, scallops and salmon in the Alaska region. These levels were proposed by the EFH technical teams and approved by the NMFS Core Team. The technical teams were composed of specialized biologists that study species covered under specific FMPs. The technical teams prepared the EFH reports for each FMP. The Core Team was composed of NMFS personnel involved in fishery management, protected species, and habitat management. One person from the Council staff was on the Core Team, but did not participate in making EFH recommendations. The Core Team prepared the EA.

Table 1.1 Levels of essential fish habitat information currently available for Alaska scallops, by life history stage. Juveniles were subdivided into early and late juvenile stages based on survey and fishery selectivity curves.

Species	Eggs	Larvae	Early Juveniles	Late Juveniles	Adults
Weathervane scallops	0a	0a	0a	1	2
Pink scallops	0a	0c	0a	0a	0a
Spiny scallops	0a	0c	0a	0a	0a
Rock scallops	0a	0c	0a	0a	0a

Note: for the larval stages of Pink, Spiny, and Rock scallops information is insufficient to infer general distributions.

0a: Some information on a species' life stage upon which to infer general distribution.

0c: No information on the actual species' life stage and no information on a similar species or adjacent life stages, or where complexity of a species stock structure prohibited inference of general distribution.

Table 1.2 Levels of essential fish habitat information currently available for BSAI groundfish, by life history stage. Juveniles were subdivided into early and late juvenile stages based on survey selectivity curves.

Species	Eggs	Larvae	Early Juveniles	Late Juveniles	Adults
Pollock	1	1	1	1	2
Pacific cod	0a	0a	0a	1	2
Yellowfin sole	0a	0a	0a	1	2
Greenland turbot	0a	0a	0a	1	2
Arrowtooth flounder	0a	0a	0a	1	2
Rock sole	0a	0a	0a	1	2
Other flatfish	0a	0a	0a	1	2
Flathead sole	0a	0a	0a	1	2
Sablefish	0a	0a	0a	1	2
Pacific ocean perch	-	0a	0a	1	1
Northern rockfish	-	0b	0b	1	1
Shortraker rockfish	-	0b	0a-b	0b	1
Rougeye rockfish	-	0b	0a-b	1	1
Dusky rockfish	-	0b	0b	0a	1
Thornyhead rockfish	0a	0a	0a	0a	1
Atka mackerel	0a	0a	0b	0b	2
Squid	0a	-	0a	0a	0a
Other species					
sculpins	0a	0a	0a	0a	1
skates	0a	-	0a	0a	1
sharks	-	-	0a	0a	0a
octopus	0a	-	0a	0a	0a
squid	0a	-	0a	0a	0a
Forage fish species					
smelts	0a	0a	0a	0a	0a
other forage fish ^{1,2}	0	0	0	0	0

NOTE: “-” indicates a species that has internal fertilization and bears live young.

¹Other forage fish includes all members of the lanternfish, deep sea smelt, sand lance, sandfish, gunnel, shanny, krill, bristlemouth families.

²For the egg and larvae stages for Myctophids, Bathylagids, Pholids, and Stichaeids, the larvae stage for Sandfish, and the egg, larvae and juvenile stages for gonostomids, information is insufficient to infer general distribution.

0a: Some information on a species' life stage upon which to infer general distribution.

0b: No information on the life stage, but some information on a similar species or adjacent life stage from which to infer general distribution.

Table 1.3 Levels of essential fish habitat information currently available for GOA groundfish, by life history stage.

Species	Eggs	Larvae	Early Juveniles	Late Juveniles	Adults
Pollock	1	1	1	1	2
Pacific cod	0a	0a	0a	1	2
Shallow water flatfish					
Yellowfin sole	0a	0a	0a	1	2
Rock sole	0a	0a	0a	1	2
Deepwater flatfish	0a	0a	0a	0a	1
Arrowtooth flounder	0a	0a	0a	1	2
Rex sole	0a	0a	0a	0a	1
Flathead sole	0a	0a	0a	1	2
Sablefish	0a	0a	0a	1	2
Pacific ocean perch	-	0a	0a	1	1
Northern rockfish	-	0b	0b	1	1
Shortraker rockfish	-	0b	0a-b	0b	1
Rougeye rockfish	-	0b	0a-b	1	1
Yelloweye rockfish	-	0b	0a	1	1
Pelagic shelf rockfish					
Dusky rockfish	-	0b	0b	0a	1
Thornyhead rockfish	0a	0a	0a	0a	1
Atka mackerel	0a	0a	0a	0a	1
Other species					
sculpins	0a	0a	0a	0a	1
skates	0a	-	0a	0a	1
sharks	-	-	0a	0a	0a
octopus	0a	-	0a	0a	0a
squid	0a	-	0a	0a	0a
Forage Fish species					
smelts	0a	0a	0a	0a	0a
other forage fish ^{1,2}	0	0	0	0	0

NOTE: "-" indicates a species that has internal fertilization and bears live young.

¹Other forage fish includes all members of the lanternfish, deep sea smelt, sand lance, sandfish, gunnel, shanny, krill, bristlemouth families.

²For the egg and larvae stages for Myctophids, Bathylagids, Pholids, and Stichaeids, the larvae stage for Sandfish, and the egg, larvae and juvenile stages for gonostomids, information is insufficient to infer general distribution.

0a: Some information on a species' life stage upon which to infer general distribution.

0b: No information on the life stage, but some information on a similar species or adjacent life stage from which to infer general distribution.

Table 1.4 Levels of essential fish habitat information currently available for BSAI king and Tanner crab, by life history stage. Juveniles were subdivided into early and late juvenile stages based on survey selectivity curves.

Species/Stock	Eggs	Larvae	Early Juveniles ¹	Late Juveniles ²	Adults
<u>Red King Crab</u>					
Bristol Bay	2	2	1	2	2
Pribilof Islands	2	1	0c	2	2
Norton Sound	2	0c	0c	2	2
Dutch Harbor	2	0c	0c	2	2
Adak	1	0c	0c	0c	1
<u>Blue King Crab</u>					
Pribilof Islands	2	1	2	2	2
St. Matthew I.	1	0c	0c	1	2
St. Lawrence I.	0b	0c	0c	0c	1
<u>Golden King Crab</u>					
Seagum Pass	2	0c	0c	2	2
Adak	1	0c	0c	1	2
Pribilof Islands	1	0c	0c	1	2
Northern District	0c	0c	0c	0c	0c
<u>Scarlet King Crab</u>					
Bering Sea	0b	0c	0c	0c	1
Adak	0b	0c	0c	0c	1
Dutch Harbor	0b	0c	0c	0c	1
<u>Tanner Crab (C. bairdi)</u>					
Bristol Bay	2	1	1	2	2
Pribilof Islands	2	1	1	2	2
Eastern Aleutians	1	0c	1	2	2
Western Aleutians	0b	0c	0c	0c	1
<u>Snow Crab (C. Opilio)</u>					
Eastern Bering Sea	2	1	1	2	2
<u>Grooved Crab (C. tanneri)</u>					
Bering Sea	0b	0c	0c	0c	1
Eastern Aleutians	0b	0c	0c	0c	1
Western Aleutians	0b	0c	0c	0c	1
<u>Triangle Crab (C. angulatus)</u>					
Bristol Bay	1	0c	0c	0c	1
Eastern Aleutians	1	0c	0c	0c	1

¹ Early juvenile crab are defined as settled crab up to a size approximating age 2.

² Late juvenile crab are defined as age 2 through the first size of functional maturity.

Note: For any crab species/stock's life stage at level 0, information was insufficient to infer general distribution (0a).

0b: No information on the life stage, but some information on a similar species or adjacent life stage from which to infer general distribution.

0c: No information on the actual species' life stage and no information on a similar species or adjacent life stages, or where complexity of a species stock structure prohibited inference of general distribution.

Table 1.5 Information levels of EFH assessments currently available for Alaska salmon by regions.

Region I, Southeastern

Species	Eggs and larvae	Juveniles fresh water (fry - smolt)	Juveniles estuarine	Juveniles marine	Adults, immature/ maturing marine	Adults, fresh water
Chinook	1-2	1-2	1-2	1-2	1-2	1-3
Coho	1-3*	2-4*	1-2	1	1	1-3
Pink	1-3	1-3	1-3	1-3	1-3	1-3
Sockeye	1-3	1-4*	1-3	1-2	1-2	1-3
Chum	1-3	1-3	1-3	1-3	1-2	1-3

Region II, Southcentral

Species	Eggs and larvae	Juveniles fresh water (fry - smolt)	Juveniles estuarine	Juveniles marine	Adults, immature/ maturing marine	Adults fresh water
Chinook	1-2	1-3	1	1	1-2	1-3
Coho	1-2	1-2	1-2	1	1-2	1-2
Pink	1-3	1-2	1-2	1-3	1-3	1-3
Sockeye	1-3	1-4	1-2	1	1-2	1-3
Chum	1-3	1-3	1-2	1-3	1-2	1-3

Region III, Southwestern

Species	Eggs and larvae	Juveniles fresh water (fry-smolt)	Juveniles estuarine	Juveniles marine	Adults, immature/ maturing marine	Adults fresh water
Chinook	1-2	1-2	1	1	1-2	1-3
Coho	1-2	1-2	1-2	1	1-2	1-2
Pink	1-2	1-2	1-2	1-2	1-2	1-3
Sockeye	1-3	1-4	1-2	1-2	1-2	1-3
Chum	1-3	1-2	1-2	1-2	1-2	1-3

* Level 3-4 knowledge is available for some stream systems that have been intensively studied, such as the Situk River.

Table 1.5 (continued). Information levels of EFH assessments currently available for Alaska salmon by regions.

Region IV, Western

Species	Eggs and larvae	Juveniles fresh water (fry - smolt)	Juveniles estuarine	Juveniles marine	Adults, immature/ maturing marine	Adults, fresh water
Chinook	1-2	1	1	1	1-2	1-2
Coho	1-2	1	1	1	1	1-2
Pink	1	1	1	1	1	1
Sockeye	1	1	0a	0a	1-2	1
Chum	1-2	0a	0a	0a	1-2	1-2

Region V, Arctic

Species	Eggs and larvae	Juveniles fresh water (fry - smolt)	Juveniles estuarine	Juveniles marine	Adults, immature/ maturing marine	Adults fresh water
Chinook	1	1	1	1	1	1
Coho	1	1	1	0a	1	1
Pink	1	0a	0a	0a	0a	1
Sockeye	1	1	0a	0a	0a	1
Chum	1	0a	0a	0a	0a	1-2

Region VI, Interior

Species	Eggs and larvae	Juveniles fresh water (fry-smolt)	Juveniles estuarine	Juveniles marine	Adults, immature/ maturing marine	Adults fresh water
Chinook	1	1	1	1	1	1
Coho	1	1	1	1	1	1
Pink	1	0a	0a	1	0a	1
Sockeye	1	1	0a	0a	0a	1
Chum	1-2	1	1	1	1	1-2

0a: Some information on a species' life stage upon which to infer general distribution